

**National Recovery Plan for the
Narrow-leaf Bent-grass
*Deyeuxia pungens***

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Australian Government

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Summary

The Narrow-leaf Bent-grass *Deyeuxia pungens* is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 and Threatened under the Victorian *Flora and Fauna Guarantee Act* 1988. The species is endemic to eastern Victoria, where about 220 plants grow in two populations. The main threat may be grazing by feral animals. This national Recovery Plan for *D. pungens* details the species' distribution and biology, conservation status, threats, and recovery objectives and actions necessary to ensure its long-term survival.

Species Information

Description

The Narrow-leaf Bent-grass *Deyeuxia pungens* is a tufted, perennial grass growing to 1 m tall. Leaves are long and thin, to 45 cm long and 1.5 mm wide, strongly ribbed, inrolled, hairless, slightly rough to the touch and with a sharp point. The ligule is up to 11 mm long, hairless and papery. The inflorescence is a contracted, spike-like panicle 10–30 cm in length, and may be lobed or interrupted near the base. Glumes are up to 5 mm long and finely tapered. Lemmas are up to 5 mm long, irregularly toothed at the tip, have 5–7 nerves and have a short tuft of hairs at the base. A tiny awn, to 0.5 mm long, is sometimes attached just below the tip of the lemma. Flowering occurs in December to January (description from Walsh 1992 and Walsh & Entwisle 1994). Virtually nothing is known of the biology and ecology of *D. pungens*.

Distribution

Deyeuxia pungens is endemic to Victoria, where it is known from only two locations near Suggan Buggan in far eastern Victoria (Walsh 1992), in the Australian Alps IBRA Bioregion (DEH 2000). The altitudinal range of the known populations is 800–870 m above sea level. Both are within the Alpine National Park.

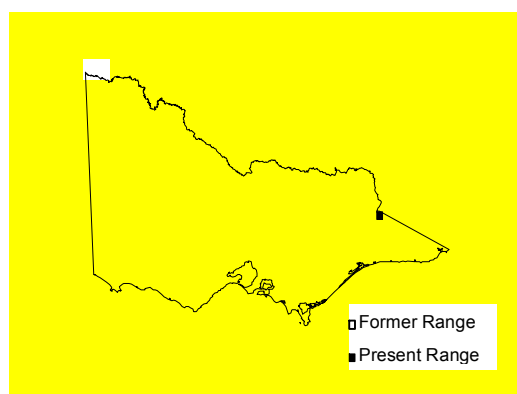


Figure 1. Distribution of *Deyeuxia pungens* in Victoria

Maps showing the distribution of *D. pungens* are available from the Department of Sustainability and Environment Flora Information System (DSE-FIS), which is a state-wide repository for flora grid and site distribution data, photographs and text descriptions, and is updated regularly. These data are available on request in a variety of formats for natural resource management purposes.

Population Information

Two populations of *Deyeuxia pungens* are known, both occurring in the Alpine National Park:

- Ballantyne Hills. Population size about 170 plants, with potentially many other plants in less accessible areas nearby.
- Ingeegoodbee Track. Population size 53 plants.

Habitat

The *Deyeuxia pungens* population in the Ballantyne Hills occurs in rocky outcrop scrub, and is associated with *Acacia rubida*, *Exocarpos cupressiformis*, *Leonema lamprophyllum*, *Olearia iodochoa*, *Ozothamnus obcordatus*, *Ozothamnus conditus*, *Philothea trachyphylla* and *Platysace lanceolata*. The Ingeegoodbee Track population occurs in dry woodland and is associated with *Bursaria lasiophylla*, *Eucalyptus macrorhyncha*, *Eucalyptus nortonii*, *Eucalyptus albens*, *Exocarpos cupressiformis*, *Indigofera australis* and *Leucopogon fletcheri*. Both sites occur on skeletal soils developed on Snowy River volcanics. Plants tend to be most abundant in crevices and on ledges of the steepest, most exposed cliff-lines. In flatter areas there are fewer plants.

Threats

Deyeuxia pungens is known only from one very small area in eastern Victoria. As there is no information on past distribution or abundance, and no evidence of any declines in existing populations, it is not possible to determine if the species has suffered any decline in range and/or abundance. Both populations occur within the Alpine National Park, and while current threats are generally rated as low, given the very limited distribution and low numbers of plants, the risk from stochastic events is probably moderate to high. However, it is likely that additional populations of *D. pungens* occur in remote and inaccessible areas in the vicinity of the two existing populations, and also possibly in adjoining areas of New South Wales (c. 13 km away) (Walsh 1992). Current threats are:

Grazing: The sites where the two known populations occur was within a licensed grazing area, but cattle grazing has now ceased in the Alpine National Park. Many plants are on more or less sheer and mostly un-vegetated cliffs, and are probably at low risk from cattle or horse grazing. However, grazing by feral goats may be a more serious threat, especially as goats can negotiate the steep rocky terrain where most plants occur, although there was little evidence of herbivore grazing in November 2002 (N. Walsh pers. obs.). Competition and land degradation by feral goats is listed under the EPBC Act as a Key Threatening Process.

Road works: The population at Ingeegoodbee Track is close to the track, and may be at risk from any works on the track.

Recovery Information

Directions for recovery of *D. pungens* include habitat conservation, restoration and management, combined with an understanding of the species' ecological and biological requirements. To achieve this, recovery actions are primarily structured to (i) acquire baseline data, (ii) assess habitat condition including ecological and biological function, (iii) protect populations to maintain or improve population growth and (iv) to engage the community in recovery actions.

Overall Objective

The **overall objective** of recovery is to minimise the probability of extinction of *Deyeuxia pungens* in the wild and to increase the probability of important populations becoming self-sustaining in the long term. Within the life span of this Recovery Plan, the **specific objectives** of recovery for *Deyeuxia pungens* are to:

- Acquire accurate information for conservation status assessments.
- Identify habitat that is critical, common or potential.
- Ensure that all populations and their habitat are protected and managed appropriately.
- Manage threats to populations.

- Identify key biological functions
- Determine the growth rates and viability of populations.
- Establish populations in cultivation.
- Build community support for conservation.

Program Implementation

The Recovery Plan will run for five years from the time of implementation and will be managed by the Department of Sustainability and Environment. A Threatened Flora Recovery Team, consisting of scientists, land managers and field naturalists will be established to oversee threatened flora recovery in Victoria in general. Technical, scientific, habitat management or education components of the Recovery Plan will be referred to specialist sub-committees on research, *in situ* management, community education and cultivation. Regional Recovery Teams will be responsible for preparing work plans and monitoring progress toward recovery.

Program Evaluation

The Recovery Team will be responsible for annual assessments of progress towards recovery. This Recovery Plan will be reviewed within five years of the date of adoption.

Recovery Actions and Performance Criteria

Action	Description	Performance Criteria
Specific objective 1		
Acquire accurate information for conservation status assessments		
1.1	Acquire baseline population data by conducting detailed field and desk top surveys including (a) identification of the area and extent of populations; (b) estimates of the number, size and structure of populations and (c) estimation of population change. Responsibility: DSE	<ul style="list-style-type: none"> Determination or update of conservation status included in state and national threatened species lists. Target populations accurately mapped.
Specific objective 2		
Identify habitat that is critical, common or potential		
2.1	Accurately survey known habitat and collect floristic and environmental information describing community ecology and condition. Responsibility: DSE	<ul style="list-style-type: none"> Requirements for completion of essential life history stages, recruitment and dispersal identified at known sites. Habitat critical to the survival of the species is mapped.
2.2	Identify and survey potential habitat, using ecological and bioclimatic information indicating habitat preference. Responsibility: DSE	<ul style="list-style-type: none"> Predictive model for potential habitat developed and tested.
Specific objective 3		
Ensure that all populations and their habitat are legally protected		
3.1	Protect populations on public land. Responsibility: PV	<ul style="list-style-type: none"> Confirm whether or not the Ballantyne Hills site falls within the Alpine National Park.
Specific objective 4		
Manage threats to populations		
4.1	Identify disturbance regimes to maintain habitat. Responsibility: DSE, PV	<ul style="list-style-type: none"> Preparation of management prescriptions for ecological burning at Ballantyne Hills and Ingeegoodbee Track sites.
4.2	Control threats from road works and potential herbivore grazing by installing fencing and supervising road contractors. Responsibility: PV	<ul style="list-style-type: none"> Measurable seedling recruitment/vegetative regeneration and reduction in plant mortality. Supervise contractors for works at Ingeegoodbee Track site. Install fencing to exclude herbivore grazing, if grazing is determined to be a real threat to those populations

Action	Description	Performance Criteria
Specific objective 5		
Identify key biological functions		
5.1	Evaluate current reproductive/regenerative status, seed bank status, by determining longevity, fecundity and recruitment levels. Responsibility: DSE	<ul style="list-style-type: none"> Seed bank/regenerative potential quantified for each population.
5.2	Determine seed germination requirements by conducting laboratory and field trials aimed to identify key stimuli and determine stimuli for vegetative regeneration. Responsibility: DSE	<ul style="list-style-type: none"> Stimuli for recruitment/regeneration identified. Management strategies identified to maintain, enhance or restore processes fundamental to reproduction and survival.
Specific objective 6		
Determine the growth rates and viability of populations		
6.1	Measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data. Responsibility: DSE, PV	<ul style="list-style-type: none"> Techniques for monitoring developed and implemented. Census data for target populations.
6.2	Collate, analyse and report on census data and compare with management histories. Responsibility: DSE, PV	<ul style="list-style-type: none"> Population growth rates determined and Population Viability Analysis completed for target populations.
Specific objective 7		
Establish populations in cultivation		
7.1	Establish cultivated plants <i>ex situ</i> for inclusion in living collections to safeguard against any unforeseen destruction of wild populations. Responsibility: DSE, RBG	<ul style="list-style-type: none"> Development of effective propagation and cultivation techniques. At least 30 mature plants in cultivation.
7.2	Establish a seed bank and determine seed viability. Responsibility: DSE	<ul style="list-style-type: none"> Long-term storage facility identified. Seed from target populations in storage.

Action	Description	Performance Criteria
Specific objective 8		
Build community support for conservation		
8.1	Identify opportunities for community involvement in the conservation of <i>Deyeuxia pungens</i> .	<ul style="list-style-type: none"> • Presentation to community nature conservation groups, notably Catchment Management Authority implementation committee, and Landcare groups.
Responsibility: DSE		

Abbreviations

DSE	Department of Sustainability and Environment
PV	Parks Victoria
RBG	Royal Botanic Gardens, Melbourne

Management Practices

Management practices that will aid recovery

Further surveys in the area where existing populations occur are highly desirable, as there is extensive apparently suitable habitat nearby. On-ground site management will initially aim to determine the nature and level of any threats, and instigate measures to mitigate these to prevent declines and create conditions for maintenance or increase of population size. Threats potentially requiring management include grazing by feral animals. In addition, some *ex situ* conservation measures including seed storage and germination trials, will be required. Addressing major knowledge gaps is also required, especially determining the mechanisms underlying recruitment and regeneration. Successful *in situ* population management will be founded on understanding the relationships between *D. pungens* and associated flora, and its response to environmental processes. These are directly linked to biological function and are thus vital to recovery. Demographic censusing will be necessary to gather life history information and to monitor the success of particular management actions. Surveys of known and potential habitat should continue to better define the distributions and size of populations. Providing information to land managers and the broader community in the region will increase awareness of the species, provide for increased protection of existing populations, an increased likelihood on new populations being found, and reducing the risk of inadvertent damage occurring.

Management practices that will avoid significant adverse impacts

Providing land managers with information on the location, distribution, habitat and ecology of *D. pungens* will help to protect existing populations from inadvertent damage, and raising general awareness may result in the location of any new populations. Populations occurring in potentially high-risk locations such as roadsides may need appropriate signposting. Surveys in potential habitat likely to be impacted by any roading proposals will be required to avoid damage to or destruction of any currently unknown populations.

Affected interests

Populations of *Deyeuxia pungens* occur within the Alpine National Park which is managed by Parks Victoria, who have approved the actions outlined in this Recovery Plan subject to the availability of adequate funding.

Role and interests of indigenous people

Indigenous communities on whose traditional lands *D. pungens* occurs will be advised, through the relevant DSE Regional Indigenous Facilitator, of the preparation of this Recovery Plan and invited to provide comments if so desired. Indigenous communities will be invited to be involved in the implementation of the Recovery Plan.

Benefits to other species/ecological communities

The Recovery Plan includes a number of potential biodiversity benefits for other species and vegetation communities in Victoria. Principally, this will be through the protection and management of habitat. Notably, *D. pungens* occurs within, or close to White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, listed as an endangered vegetation community under the *EPBC Act* 1999. Implementation of this recovery plan is likely to also benefit those threatened woodlands. The adoption of broad-scale management techniques and collection of baseline data will also benefit a number of other plant species growing in association with *D. pungens*, particularly those species with similar life forms and/or flowering responses. The Recovery Plan will also provide an important public education role as threatened flora have the potential to act as 'flagship species' for highlighting broader nature conservation and biodiversity issues such as land clearing, grazing, weed invasions and habitat degradation.

Social and economic impacts

The implementation of this Recovery Plan will not cause significant adverse social and economic impacts. The two known populations occur within the Alpine National Park, and the Victorian Government recently announced the cessation of licensed cattle grazing in the park.

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Priority, Feasibility and Estimated Costs of Recovery Actions

Action	Description	Priority	Feasibility	Responsibility	Cost estimate					Total
					Year 1	Year 2	Year 3	Year 4	Year 5	
1	Conservation status									
1.2	Collect baseline data	1	100%	DSE	\$6,000	\$0	\$0	\$0	\$0	\$6,000
2	Habitat requirements									
2.1	Survey known habitat	1	100%	DSE	\$10,000	\$0	\$0	\$0	\$0	\$10,000
2.2	Identify, survey potential habitat	1	75%	DSE	\$10,000	\$0	\$0	\$0	\$0	\$10,000
3	Legal protection of habitat									
3.1	Protect public land habitat	2	75%	PV	\$0	\$2,000	\$2,000	\$0	\$0	\$4,000
4	Manage threats									
4.1	Identify disturbance regimes	2	75%	DSE, PV	\$0	\$15,000	\$0	\$0	\$0	\$15,000
4.2	Control threats	1	75%	PV	\$0	\$5,000	\$5,000	\$5,000	\$5,000	\$20,000
5	Identify key biol. functions									
5.1	Evaluate reproductive status	2	75%	DSE	\$0	\$0	\$10,000	\$10,000	\$0	\$20,000
5.2	Seed germination	2	75%	DSE	\$0	\$0	\$10,000	\$10,000	\$0	\$20,000
6	Growth rates, pop. viability									
6.1	Conduct censusing	2	100%	DSE, PV	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$30,000
6.2	Collate, analyse and report	2	100%	DSE, PV	\$4,000	\$4,000	\$4,000	\$4,000	\$10,000	\$26,000
7	Establish pops. in cultivation									
7.1	Establish cultivated plants	3	50%	DSE, RBG	\$0	\$6,000	\$6,000	\$6,000	\$6,000	\$24,000
7.2	Establish a seed bank	2	50%	DSE	\$0	\$4,000	\$4,000	\$4,000	\$4,000	\$16,000
8	Education, communication									
8.1	Community extension	3	100%	DSE	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$30,000
TOTAL					\$42,000	\$48,000	\$53,000	\$51,000	\$37,000	\$231,000